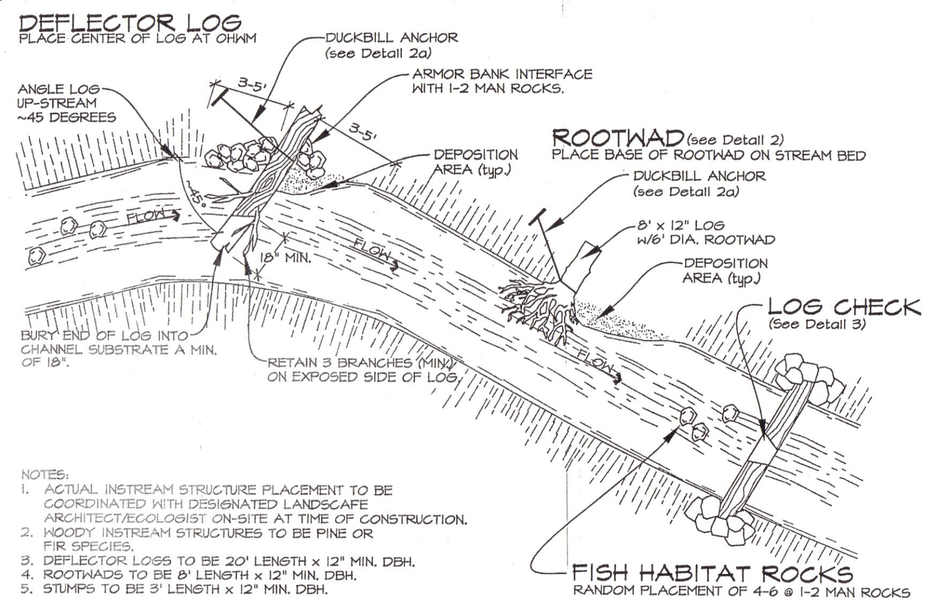
① INSTREAM STRUCTURE PLACEMENT (typ.)

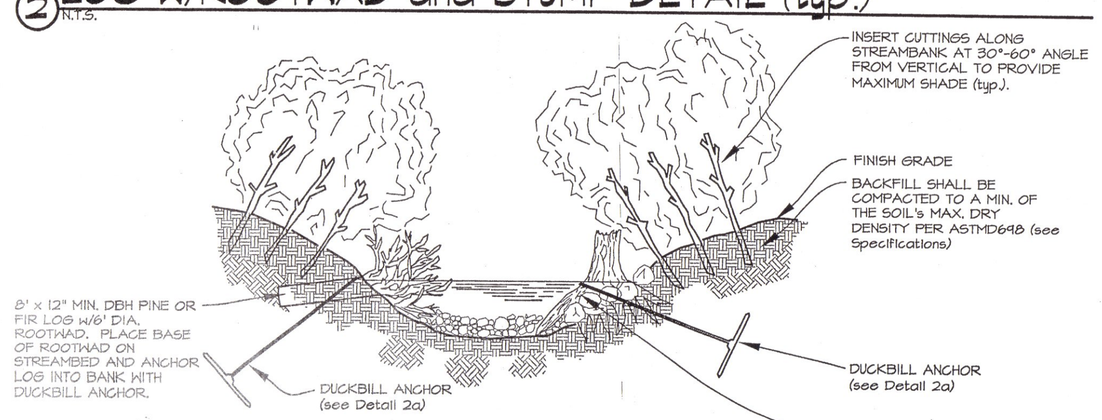
N.T.S.



NOTES:
1. ACTUAL INSTREAM STRUCTURE PLACEMENT TO BE COORDINATED WITH DESIGNATED LANDSCAPE ARCHITECT/ECOLOGIST ON-SITE AT TIME OF CONSTRUCTION.
2. WOODY INSTREAM STRUCTURES TO BE PINE OR FIR SPECIES.
3. DEFLECTOR LOGS TO BE 20' LENGTH x 12" MIN. DBH.
4. ROOTWADS TO BE 8' LENGTH x 12" MIN. DBH.
5. STUMPS TO BE 3' LENGTH x 12" MIN. DBH.

② LOG w/ROOTWAD and STUMP DETAIL (typ.)

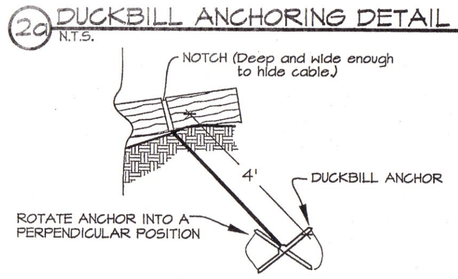
N.T.S.



NOTES:
1. ALL INSTREAM STRUCTURES TO BE PINE OR FIR SPECIES.
2. ROOTWAD PROTRUSION INTO STREAM CHANNEL SHOULD BE MAX. 1/3 WIDTH OF CHANNEL.

2a DUCKBILL ANCHORING DETAIL (typ.)

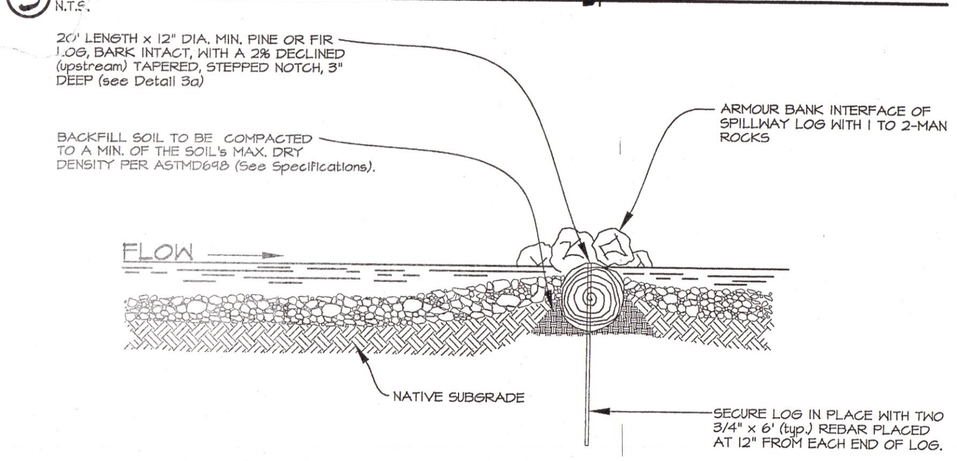
N.T.S.



NOTES:
1. ANCHOR DEFLECTOR LOGS (see Detail 1), LOGS w/ROOTWADS, AND STUMPS ON THE UPSTREAM SIDE OF STREAMBANK WITH DUCKBILL ANCHOR.
2. DRIVE ANCHOR A MIN. OF 4' INTO THE GROUND WITH A HAMMER AND DRIVE STEEL. ONCE THE ANCHOR IS AT THE PROPER DEPTH, REMOVE THE DRIVE STEEL.
3. WRAP THE STEEL CABLE AROUND THE DRIVE STEEL AND PULL UPWARD A DISTANCE SLIGHTLY LONGER THAN THE LENGTH OF THE ANCHOR BODY. THIS WILL ROTATE THE ANCHOR INTO A PERPENDICULAR POSITION.
4. NOTCH THE LOG WITH A SAW THE WIDTH AND DEPTH OF THE CABLE AROUND THE CIRCUMFERENCE OF THE LOG, AS SHOWN.
5. WRAP THE STEEL ANCHOR CABLE IN THE NOTCH AROUND THE LOG TO HIDE THE CABLE.

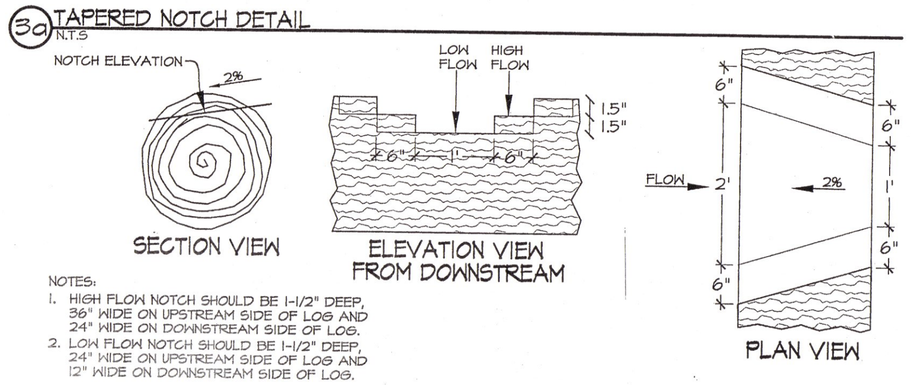
③ LOG CHECK DAM DETAIL (typ.)

N.T.S.



3a TAPERED NOTCH DETAIL

N.T.S



NOTES:
1. HIGH FLOW NOTCH SHOULD BE 1-1/2" DEEP, 36" WIDE ON UPSTREAM SIDE OF LOG AND 24" WIDE ON DOWNSTREAM SIDE OF LOG.
2. LOW FLOW NOTCH SHOULD BE 1-1/2" DEEP, 24" WIDE ON UPSTREAM SIDE OF LOG AND 12" WIDE ON DOWNSTREAM SIDE OF LOG.

IN-STREAM STRUCTURE INSTALLATION SPECIFICATIONS

PART 1 – GENERAL SITE CONDITIONS and EROSION CONTROL

A qualified Landscape Architect/Ecologist consultant shall be on site, as necessary, to monitor construction and approve minor revisions to the plan.

Landscape Contractor shall give the designated Landscape Architect/Ecologist a minimum of ten (10) days notice prior to intention to proceed with construction.

No construction work shall commence until there is a meeting between the Client, the designated Landscape Architect/Ecologist, and participating Landscape Contractor. The approved plans and specifications shall be reviewed to allow parties involved to understand the intent and the specific details related to the construction documents, specifications, and site constraints.

A copy of the current approved plans and other agency permits must be on site whenever construction is in progress and shall remain on site until project completion. The Landscape Contractor shall keep a separate complete record set of prints at the job site during construction for the sole purpose of "red-lining" changes or modifications to the approved plans and shall update said information on a daily basis. Such changes will only be made with approval of the designated Landscape Architect/Ecologist.

Construction must be performed in accordance with Agency standards, codes, permit conditions, and other applicable ordinances and policies. The applicant is responsible for obtaining any other related or required permits prior to the start of construction.

Topographic elevations represented on this plan are based upon topographic maps supplied by Tomkin's Land Surveying, Inc. Final elevations may vary depending on site-specific conditions. It is the responsibility of the Landscape Contractor to verify pre-construction topographic elevations and tree locations for accuracy prior to grading. The designated Landscape Architect/Ecologist shall be notified of any conflicts/discrepancies and resolve prior to start of construction.

EROSION CONTROL MEASURES
Following are erosion control measures required for all sensitive areas and sensitive area buffers.

Contractor shall install erosion control measures (silt fencing, strawbales, etc.) adjacent to any sensitive areas on the project site prior to any construction activity. The designated Landscape Architect/Ecologist is to verify locations of erosion control measures prior to in-stream structure placement.

Contractor shall maintain erosion control measures during implementation of the stream buffer enhancement plan. As construction progresses and seasonal conditions dictate, erosion control facilities shall be maintained and/or altered as required by the designated Landscape Architect/Ecologist to ensure continued erosion/sedimentation control. These measures shall remain in place until written authorization is given by the designated Landscape Architect/Ecologist for removal or adjustment.

During construction, the Landscape Contractor must use materials and construction methods that prevent toxic material and other pollutants from entering the stream and buffer areas. Preventative measures shall be used to protect existing storm drainage systems, existing utilities, and roads.

Where possible, existing natural ground cover vegetation shall remain and be maintained for silt control.

During installation of the in-stream structures, a temporary bypass will be installed to divert flows around the work area. Any turbid water will be pumped to an adjacent upland temporary erosion control area in which silt fencing and strawbales have been installed to trap sediments. The designated Landscape Architect/Ecologist shall designate adjacent upland area in which to pump the turbid water.

PART 2 – SNAGS and IN-STREAM STRUCTURE SPECIFICATIONS

FLAG LOCATIONS OF SNAGS and IN-STREAM STRUCTURES
The designated Landscape Architect/Ecologist shall flag placement locations for snags and woody in-stream structures (deflector logs, rootwads, and log check dams) prior to installation.

Item	Min size	Quantity	Comments
Snags	24'-53' length	3	Min. 8 main branches, per detail
Deflector logs	20' length, without rootwads	15	Min. 3 branches exposed
Log with Rootwads	8' length, 6' dia. min. rootwad	36	Wash off loose soil
Log Check Dams	20' length	5	Pine or fir species, bark intact, per detail

INSTALL WOODY IN-STREAM STRUCTURES
Install woody in-stream structures (deflector logs, logs with rootwads, log check dams) at locations depicted on Sheet W1.0. The designated Landscape Architect/Ecologist shall approve in-stream structure locations prior to installation. Install log check dams, logs with rootwads, and deflector logs per details on Sheet W1.1. Rootwad and deflector logs should not block more than 1/3 flow of channel at Ordinary High Water Line (OHWL).

PLACE FISH HABITAT ROCKS IN CHANNEL
After all in-stream structures have been installed, Landscape Contractor shall place specified fish habitat rocks in channel per Detail 1on Sheet W1.1.

INSTALL SNAGS
Install snags at locations depicted on Sheet W1.0. Snags shall be cedar or fir species. Each snag to be anchored into subgrade a minimum of 25% of the total length as depicted in Detail 4 on Sheet W1.1. The designated Landscape Architect/Ecologist shall approve locations prior to installation. Attach one bird nest box to each vertical snag (see detail).

Boxes are available at:
Talasaea Consultants, (425) 861-7550 or
Wild Birds Unlimited, (206) 575-4001 or
Forestry Supplies, Inc., 1-800-752-8461

PART 3 - IRRIGATION INSTALLATION AND SEEDING

IRRIGATION
A temporary above-ground irrigation system shall be designed and installed by Landscape Contractor prior to installation of plantings within the stream buffer enhancement areas. The temporary irrigation system shall be tied into the general irrigation system for the site.

It is the Landscape Contractor's responsibility to ensure proper function and connection of the irrigation systems located within the stream buffer enhancement area on the project site.

Client shall provide water and electricity for the system. Landscape Contractor shall provide meter and hook-up to water and electrical source. Irrigation is required within the mitigation area for at least two growing seasons following planting to ensure adequate establishment of plant material.

It is the Landscape Contractor's responsibility to "winterize" installed irrigation system prior to October 15th.

It is the Landscape Contractor's responsibility to maintain the irrigation system for the duration of the two-years in which it is required. At the end of the two-year period, and if plant establishment is successful, as determined by the designated Landscape Architect/Ecologist, the Landscape Contractor shall disassemble and remove the irrigation system from within the stream buffer enhancement area.

HYDROSEED
Seed for mixes shall have been harvested a maximum of one year prior to date of seed application, and stratified or otherwise processed to ensure optimal germination rate. If substitutions are necessary, the Landscape Contractor shall obtain prior written permission from the designated Landscape Architect/ Ecologist for substitution of specified seed species and/or varieties.

Contractor shall thoroughly water all exposed soils and hydroseed following irrigation installation and seed again by hand following plant installation.

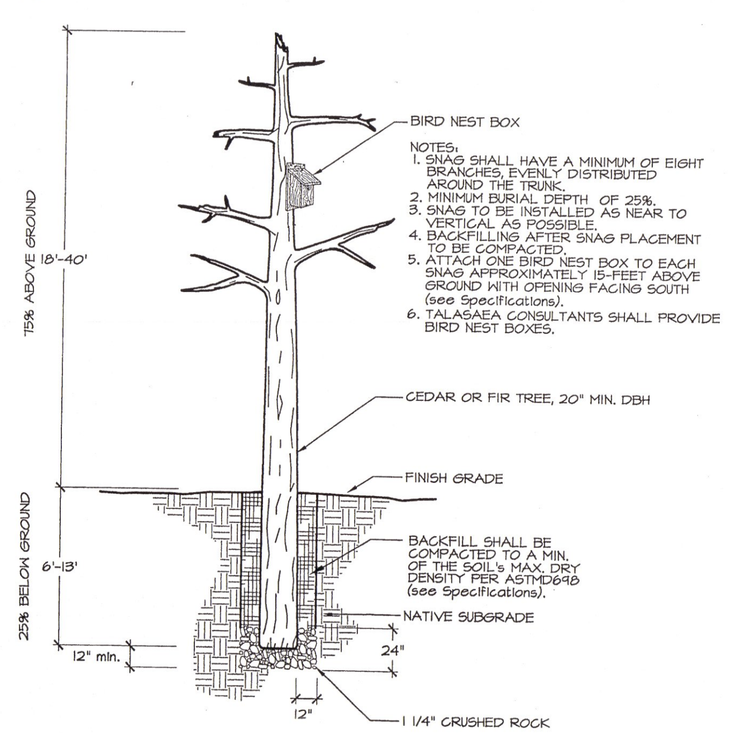
PART 4 - CONSTRUCTION INSPECTION

POST STRUCTURE INSTALLATION EVALUATION
Upon completion of structure installation and seeding, the Landscape Contractor shall provide the designated Landscape Architect/Ecologist with a set of clearly marked prints designating the actual locations of elements within the stream buffer enhancement areas.

The designated Landscape Architect/Ecologist shall approve structure installation and seeding prior to plant installation to confirm that the plans were properly implemented. If items are to be corrected, a punch list shall be prepared by the designated Landscape Architect/Ecologist and submitted to the Landscape Contractor for completion. After punch list items have been completed, the project shall be reviewed by the designated Landscape Architect/Ecologist for final internal acceptance.

④ SNAG w/NEST BOX DETAIL

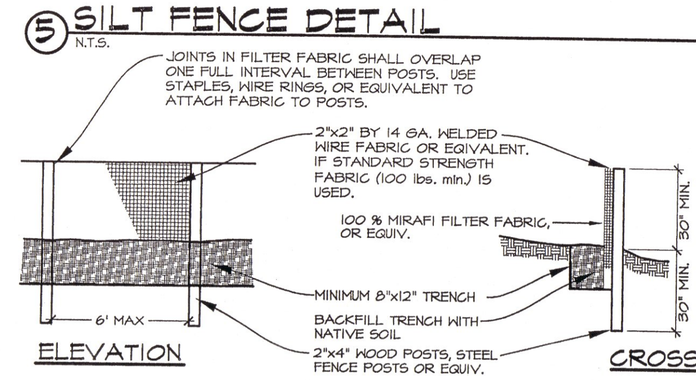
N.T.S.



NOTES:
1. SNAG SHALL HAVE A MINIMUM OF EIGHT BRANCHES, EVENLY DISTRIBUTED AROUND THE TRUNK.
2. MINIMUM BURIAL DEPTH OF 25%.
3. SNAG TO BE INSTALLED AS NEAR TO VERTICAL AS POSSIBLE.
4. BACKFILLING AFTER SNAG PLACEMENT TO BE COMPACTED.
5. ATTACH ONE BIRD NEST BOX TO EACH SNAG APPROXIMATELY 15-FEET ABOVE GROUND WITH OPENING FACING SOUTH (see Specifications).
6. TALASAEA CONSULTANTS SHALL PROVIDE BIRD NEST BOXES.

⑤ SILT FENCE DETAIL

N.T.S.



SILT FENCE MAINTENANCE STANDARDS:
1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPSLOPE OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT POND.
3. CONTRACTOR SHALL CHECK THE UPSLOPE SIDE OF THE FENCE FOR SIGNS OF CLOGGING AND SUBSEQUENT CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.
4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS 6" IN DEPTH.

TALASAEA CONSULTANTS
Resource & Environmental Planning
14020 Bear Creek Road NE, Woodinville, Washington 98072
Phone (425) 861-7550 – Fax (425) 861-7580

STREAM BUFFER ENHANCEMENT PLAN
IN-STREAM STRUCTURE DETAILS and SPECIFICATIONS
GARRISON CREEK DEVELOPMENT - PHASES 4, 6, 7, 8
COLLEGE PLACE, WASHINGTON

Revisions	Date By

Date	4-28-00
Scale	
Designed	AO
Drawn	LW
Checked	AO, BS
Approved	BS
Project #	607